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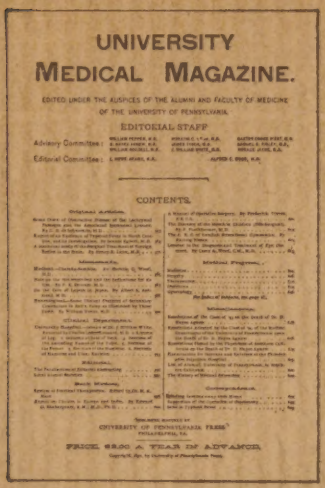

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SOME ADDITIONAL STUDIES UPON THE CLINICAL VALUE OF REPEATED CAREFUL CORRECTION OF MANIFEST REFRACTIVE ERROR IN PLASTIC IRITIS.

By CHARLES A. OLIVER, A.M., M.D.,

One of the Attending Surgeons to Wills Eye Hospital; one of the Ophthalmic Surgeons to the Presbyterian Hospital of Philadelphia, etc.

SOME ADDITIONAL STUDIES UPON THE CLINICAL VALUE OF REPEATED CAREFUL CORRECTION OF MANIFEST REFRACTIVE ERROR IN PLASTIC IRITIS.[1]

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One of the Attending Surgeons to Wills Eye Hospital; one of the Ophthalmic Surgeons to the Presbyterian Hospital of Philadelphia, etc.

Since the publication of the writer's paper upon this subject, in the transactions of this Society for 1892, he has been able, by a number of fortuitous circumstances both as to material and proper assistance, to make a series of additional studies in order to determine the causal factor of the apparent and transitory increase of ametropia in the same variety of cases as he then had the privilege to study.

Ignoring, as he then did, any cases where there were objective evidences of corneal opacity, lenticular haze, or even the faintest visible disturbances in the aqueous or vitreous humors; excluding all instances where there were any perceptible tags of adhesion between the iris and the lens; and limiting the work to those eyes where the pupils were seemingly dilated *ad maximum*, a number of experimental studies were instituted to determine, if possible, the cause of the ametropic increase.

(1) To discover whether there is a forward displacement of the lens. This was shown not to occur, objectively, in two ways. The first plan consisted in studying the plane of the iris by the use of ordinary inspection through a corneal loupe upon a brilliantly illuminated area. In this experiment, it was found that in nearly every instance the anterior plane of the iris was either vertically placed or was dragged backward. The second method was accomplished by means of the estimation of the relative positions and sizes of the catoptric images, especially of the two lenticular reflexes. Here it was found that by either roughly testing by a candle-flame or, as in several instances, more scientifically, by recourse to an ophthalmometer of

[1] Paper read before the American Ophthalmological Society, May 31, 1894, at the Third Triennial Meeting of the Congress of American Physicians and Surgeons.

Helmholtz, that whilst the anterior capsular reflex moved forward and became smaller, the posterior one moved slightly backward.

(2) To endeavor to determine clinically whether the index of refraction or whether the actual amount of either the aqueous or the vitreous humor is increased during the inflammatory process. This in measure was shown not to be the case; first by careful and repeated study of the objective appearances of successive layers of these two media, by both oblique illumination, and the ophthalmoscope. No thickening, no visible sign of increase of density of the fluids, as might be evidenced by planes of increased reflection, and even no distortion of any of the gradually deepening meridional reflexes could be conscientiously asserted; second, by reference to the fact that in nearly every case which was carefully studied, the distance between the anterior and the posterior lenticular reflexes was, as before shown, unduly increased. Thus, these two plans to a great degree invalidated the possibility of either any increased amount of the density of the fluid contents or augmentation of the contained material in the two large intra-ocular chambers.[1]

(3) To make certain that the temporary increase of the index of refraction in the type of cases here under special consideration is dependent upon either spastic tonicity of the fibres of the ciliary muscle or congestion with rigidity of the ciliary bodies. In addition to the great number of experiments pursued to formulate the conclusions given in the writer's first paper upon the subject, a number of control tests, with both mydriatic and myotic agents, were made in such a manner as to set aside any confusion or disturbing influence that might be supposed to have arisen from the first two categories of cases. This was done by first obtaining the exact corrective lens that was necessary to bring a subnormal vision to normal, care being taken to choose intelligent patients with but slight refractive error. This done, three instillations of two drops each of strong solutions of either atropine, cocaine and atropine, or eserine were made at three-minute intervals, and the ametropia was immediately re-examined, when, in every case in which the inflammatory process had not absolutely subsided, the use of the cycloplegic reduced the apparent amount of the refractive error (ordinarily one-fourth to three-fourths diopter), whilst the myotic, in every instance tried, increased the apparent amount of the ametropia. To recontrol these tests, all of the eyes whilst in a condition of surcharged dosage, as it were, were re-submitted to a few of the most important of the objective tests, when in every instance where the

[1] *Vide* article upon "The Proximate Cause of the Transient Form of Myopia associated with Iritis," by A. Schapringer, M.D., in the New York Medical Journal for October 21, 1893, and editorial, "Poor Vision after Iritis," in the May 12, 1894, number of the Philadelphia Polyclinic.

mydriatic was used, the lenticular reflexes were shown to be more greatly approximated, whilst in those cases where the myotic was employed, the lenticular reflexes became further separated.

The conclusion, therefore, is in every instance of this third variety of study not only is so-called "spastic accommodation" proved, but the supposition of the forward displacement of the lens is, in a great measure, denied, and both real and relative increases of aqueous and vitreous humor are confuted.[1]

[1] A most interesting and instructive example of this group of cases is given by Dr. John T. Carpenter, Jr., of Philadelphia, in the Philadelphia Polyclinic for May 5, 1894, where he cites an instance in which he inadvertently too early ordered a minus correction in a case of plastic iritis at the time when the refractive apparatus was in a condition of functional myopia. Complaints of the patient as the plasticity of the ciliary muscle lessened and the lens regained its normal refractive curvatures soon set matters aright by the substitution of a much weaker correction.